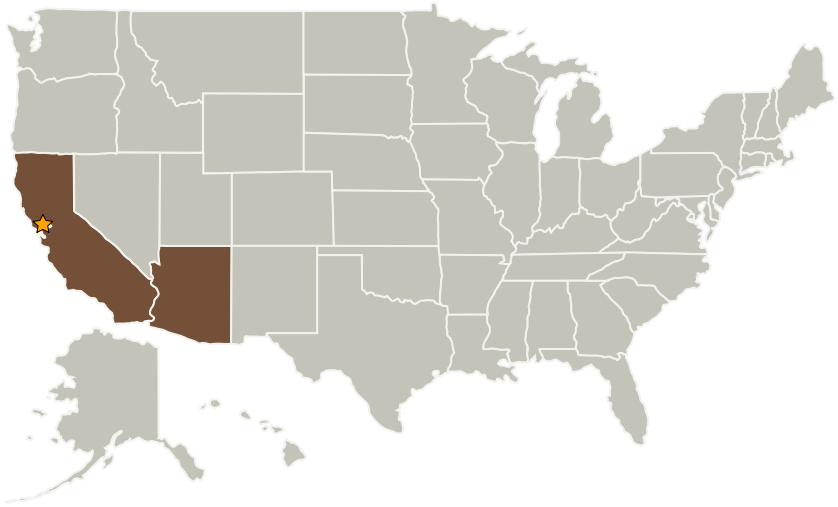
Electronic Prognostics for Vehicle Health Management, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

All electronic systems are prone to wear-out and eventual failure and this has direct implications for Vehicle Health Management for NASA with its long space missions. The accurate prediction of an impending failure can provide significant savings in functionality and mission success.[1] Accurate and timely failure prediction can support the mitigation of catastrophic faults in spacecraft systems as well as autonomous control and dynamic repairs to faults. Electronic prognostics provide advanced warnings of impending electronic module failures. The specific innovation proposed will provide tools for setting and determining the advanced warning time for prognostic-enabled electronic systems, also referred to as defining the remaining useful life (RUL). The testbed will be a high efficiency, DC-to-DC Power Converter commonly found in advanced power systems. Such power converters are commonly found in a wide range of electronic systems to adjust power levels, yet are subject to failures. The innovation would help prevent data loss and support uninterrupted operation. The reason for funding is that NASA has a stated requirement for autonomous and automated solutions to systems health management systems and electronic prognostics are required to support this objective.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Ridgetop Group, Inc.	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Tucson, Arizona

Primary U.S. Work Locations	
Arizona	California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.3 Power Management and Distribution
    - TX03.3.1 Management and Control